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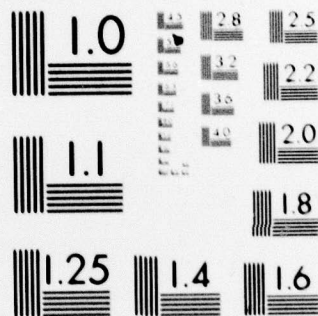
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FOREIGN TECHNOLOGY DIVISION



A CRADLE FOR AVIATION TALENTS
NANKING AVIATION COLLEGE

by

Nanking Aviation College



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FTD-ID(RS)T-1654-78

7 December 1978

MICROFICHE NR: *AD-78-C-001775*

A CRADLE FOR AVIATION TALENTS . NANKING AVIATION
COLLEGE

By: Nanking Aviation College

English pages: 6

Source: Hang K'Ung Chih Shih, Nr. 5, 1978, pp. 6-7

Country of origin: China

Translated by: Linguistic Systems, Inc.

F33657-78-D-0618

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Requester: FTD/SDSS

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A Cradle for Aviation Talents

NANKING AVIATION COLLEGE

Nanking Aviation College (N.A.C.) is one of the major institutes of higher learning in the country. It is situated by the Royal Ming River at the foothill of Mount Gold and Purple east of the historic Nanking Capitol. In 1951 when the great Korean War was at its height, the college began construction upon the ruins of the ancient Ming palaces, in order to meet the nation's demand of rapidly developing the aviation industry in a comprehensive way and of training a large number of aviation cadres in the shortest period possible. In the following year applications for admission to the college were considered. On the site once covered by weeds and infested by snakes and insects now rose rows of tall white poplars and *sterculia plantaifoliae* and many high-rising buildings and factories. Since its establishment from level ground, N.A.C. has grown continuously in both size and strength, and has provided ~~for~~ the nation ^{with} more than 10,000 trained personnel in the aviation field to work in the country's aviation industry and related units. Many of these people have become leading figures in politics and technology. N.A.C. has also provided the nation with substantial advances in science and technology, some of which were badly needed ~~by our country~~. Projects developed by faculty-student teams, such as an unmanned aircraft, a small-sized helicopter, and a simulated rotating-station for three-degree-of-freedom aviation, as well as articles in basic and applied theoretical research, have received much commendation in the recent National Scientific Conference.

To meet the rapid advances of aviation science and technology and to meet the needs of our nation's development in the aviation industry, the number of areas of concentration (majors) offered by N.A.C. has increased steadily. At present, there are 7 departments offering 17 areas of concentration and one specialty. The 7 departments are: the Aircraft, the Aviation Engines, the Autonetics, the Aviation Radio Technology, the Aerodynamics, the Aircraft Manufacturing Technology, and the Aviation Mechanical Engineering departments.

The Aircraft department offers areas of concentration (majors) in Helicopter Design, Aircraft Design, and Aircraft Instrumentation for High-Altitude Flights. They are designed to provide training in the design, research and development of helicopters,

combat aircrafts, and instrumentation for high-altitude flights for these vehicles. A modern aircraft is a very complicated piece of machinery, whose design and construction must rely on the most recent advances of many disciplines. Therefore, students majoring in Aircraft Design are expected to be able to integrate and apply their knowledge in aerodynamics, structural mechanics, strength computations, materials, and technology and to have a basic understanding of the new theory and methods in the design of aircraft structures, and also to be able to utilize with confidence structural strength testing techniques, so that they can participate in the actual design and research of aircrafts upon graduation. The Aircraft Instrumentation for High-Altitude Flights area of concentration provides training in the design and construction of aircraft fuselages and their provisions, aviation air-conditioning systems, and their accessories. In step with the developments of the space technology, more and more stringent requirements are imposed on facilities used for high-altitude flight purposes. Many problems both in theory and technology have yet to be solved.

The aviation engine is the heart of an aircraft, providing power for aviation for the latter. In order for an aircraft to be able to perform high altitude and high speed flights, the engine^{is} required to work with efficiency at high altitudes, to have light weight and small size, and to be cost-effective and reliable. To satisfy these requirements, it is necessary to utilize and to integrate the results of research in aerodynamics, heat-transfer, combustion, strength of materials, vibration, and new technology. The Aviation Engines department offers areas of concentration in Aviation Engines, and Hydraulic and Gas-Compressed Aviation Accessories, to provide training in the basic knowledge and techniques for the design and construction of aviation engines and their accessories.

The Autonetics department offers areas of concentration in Automatic Control of Flying Vehicles, Aviation Instruments and Sensing Devices, Aviation Gyroscope and Inertial Guidance, Aviation Electromechanical Appliances, and Testing. Autonetics is a young scientific discipline that has come into existence within the past few decades, ~~and~~ ^{future} ~~that~~ has promised tremendous improvements in productivity. It has found wide applications and has gained increasing importance in the aviation industry. The aviation control system can be thought of as the central nervous system of the aircraft, capable of ensuring the aircraft to perform high-altitude, high speed, or long-distance flights, and to accurately and reliably reach its destination for achieving its desired mission. Its function is especially remarkable when used in unmanned flying vehicles. The dif-

ferent areas of concentration in the Autonetics department are designed to provide training in the design, construction, and research of aviation automatic control systems, and their main components as well as power supply systems.

✓ The Aviation Radio Technology department offers areas of concentration in Radio Communication, Radar, Computer, and Computer Software. As a result of the rapid development in radio electronics, the radio technology has found increasingly wider applications. Modern aircrafts are equipped with a wide variety of communication stations to ensure reliable communication between aircrafts and aircrafts and between aircrafts and ground. They also contain radio-guidance and blind-landing facilities to provide means for determining the locations of the aircrafts, for safe take-off or landing at night or under rainy and foggy conditions. Many aircrafts are also equipped with radars for landscape surveying or for pursuit of targets. As regards computers, their use is almost ubiquitous. Not only do they assist in the design and construction of aircrafts and engines, but when used on board the aircrafts can also effect command and adjustment functions to ensure the accurate and harmonious performance of the entire flight control and guidance systems for successful accomplishment of the desired missions. The areas of concentration in the Aviation Radio Technology department are designed to provide training in the research, design, construction and evaluation in these aspects.

Aerodynamics is the study of movements of flying vehicles in the atmosphere. It is the theoretical foundation upon which the design of an aircraft is based. The development of aircrafts for high-altitude and high-speed operation is dictated by the theories of aerodynamics. The success of the design of an aircraft must also be verified by aerodynamical testings. The Aerodynamics department offers area of concentrations in Aerodynamics to provide training in aerodynamics computations, aerodynamics testing, and testing instrumentation. An Aerodynamics Research Center is also established in N.A.C. It has collaborated with the Aerodynamics department to build a wide range of wind-tunnels for low-speed, sunsonic and supersonic operations, which serve excellent educational and research purposes.

The Aircraft Manufacturing Technology department offers an area of concentration in Aircraft Manufacturing to provide training in the design, construction and research of metallic sheets and formed components for aircrafts, aircraft assembly, and technological provisions for aircraft manufacturing. In addition to the study of conventional technology in aircraft production, the students are required to acquire

knowledge and techniques of modern technology, especially the use of digital computers in the construction of aircrafts, as well as data control processing. Upon graduation, the students are expected to be able ^{to} perform basic analysis and provide solutions to problems related to aircraft production technology and commercial manufacturing, in order to meet the needs of modern aviation industry.

The Aviation Mechanical Engineering department offers an area of concentration in Aviation Mechanical Processing and a specialty in Electrical Processing, ~~to~~ ^{to} provide training in the engineering techniques and research ^{pertain to} ~~in~~ the mechanical processing technology and electrical forming technology for aviation products, and the modification and design of provisions for special purposes. Following the development in the aviation industry, new materials such as titanium alloys and high-temperature alloys are widely used. A wide range of complicated shapes and varieties of aviation products have come into existence that have the exact specifications to work reliably under various trying conditions. Students majoring in this department are trained to be able to organize technological procedures sensibly and to apply advanced techniques and evaluation methods to solve a series of technical problems so that a design on a piece of paper can be materialized to become a high-quality aviation product.

The various areas of concentration mentioned above are inter-related, all of which are fundamental components of the entire aviation science and technology. In addition to studying for the subjects of their own areas of concentration (major courses), the students are required to acquire knowledge in other majors. The duration ~~of~~ study for each major is four years, which will be both exciting and colorful for the students. In order to provide the students with a firm foundation of knowledge, 80% of the classroom hours will be devoted to the study of basic courses (including general requirement courses, basic technical courses and basic major courses). The general requirement courses and basic courses, which include politics, physical education, foreign languages, advanced mathematics, physics and chemistry, are designed to provide the students with solid preparations for further studies. In particular, the knowledge of one or two foreign languages will be very useful to the understanding of the status of science and technology overseas, which is essential to ^{attain} significant scientific achievements. Basic technical and major courses will differ somewhat depending on the area of concentration the student is majoring in. For example, courses for majors related to the mechanical areas will emphasize on mechanics, graphics, and machinery, whereas courses for majors related to electricity will emphasize on electrical engineering principles, electronic devices, and electrical

circuits. These courses are followed by proper major courses to enable the students to gain the fundamental theoretical and technical knowledge in their own areas of concentration, and to familiarize themselves with the most recent advances of their own fields. We have a large, excellent and experienced faculty to perform the teaching of basic courses and major courses. Experiments are arranged in teaching to correlate theory with practice. These experiments serve to verify the theories and to consolidate the knowledge the students learn in the classroom. Finally, *the student* is asked to work on a project to fulfil part of the requirements for graduation under the supervision of a faculty member, whereby the student will utilize the knowledge that he has acquired and concentrate his efforts to systematically solve one or two technical problems. The project thus provides ^{with} the student ^{an} opportunity to develop his ability in the analysis and the solution of problems.

In addition to administering the college programs, N.A.C. has also established a graduate program starting this year, to provide advanced training in the aviation science and technology. Under the supervision of professors and faculty members who are experienced in teaching and knowledgeable in research, graduate students will engage in the study of more advanced theoretical knowledge and also in scientific research, working towards the goal of modernizing our country's defense. In order to realise our Four Modernization Programs and to surpass other countries in science and technology, N. A. C. is working diligently to build up its strength, and to expand ^{steadily} the graduate program to meet the urgent demand to produce a large number of highly trained scientists for the modernization of our defense.

Being one of the major institutes of higher learning in the country, N.A.C. takes the solemn responsibility of providing training to talents and of offering significant contributions. The future of science depends on the young people. For those of you young people with ambitions who are willing to offer yourselves to the field of aviation for the country, N.A.C. warmly welcomes you to come and study with diligence and to meet the challenge of distinguishing yourselves in the field of aviation science and technology. Let us strive for the growth of a strong socialistic country together!

. Nanking Aviation College.



Students majoring in Aircraft Design are studying
the structures of an aircraft at N.A.C.

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